

3.0 Affected Environment

Affected Environment

3.1 INTRODUCTION

This chapter describes the existing environment at Jefferson National Expansion Memorial. The discussion is focused on resources that could potentially be affected by the implementation of any of the alternatives and provides a baseline for the subsequent evaluation of impacts documented in Chapter 4. Specific topics in this chapter are included based on the requirements of federal law, executive orders, and regulations, as well as issues raised during the public scoping process.

The topics within this chapter are discussed in the following order:

- Cultural Resources
- Natural Resources
- Visitor Opportunities and Use
- Transportation and Access
- Land Use
- Socioeconomics
- National Park Service Operations

This order was established based on the importance of the topic and the potential degree of impacts. Topics dismissed from detailed study include those that would have negligible to minor impacts on the resources based on proposed actions. These topics are discussed in Section 1.9.

3.2 CULTURAL RESOURCES

This section documents the cultural resources that are present at the Memorial and within the surrounding area. Cultural resources at Jefferson National Expansion Memorial include historic buildings, structures, sites, objects, and districts; cultural landscapes; archeological resources; and curatorial resources and museum collections.

History of the Site and Development of the Memorial

PREHISTORY

For many centuries, populations have concentrated in the central Mississippi River Valley. The confluence of the Mississippi and Missouri rivers, near present-day St. Louis, provided an abundance of resources and habitats for prehistoric people. Prehistoric sites are generally concentrated in the uplands and marginal zones with easy access to rich resources in the floodplain marshes, forests, and prairies.

The prehistory of the St. Louis region generally is divided into four main cultural periods: the Paleoindian Period (10,000 B.C.-8,000 B.C.), the Archaic Period (8,000 B.C. to 6,000 B.C.), the Woodland Period (600 B.C.-800 A.D.), and the Mississippian Period (1000-1400 A.D.). The Paleoindian Period is associated with nomadic hunting and gathering people; the Archaic Period is characterized by the diversification and refinement of subsistence strategies, by increased sedentism, population growth, trade networks, and the construction of the earliest identified earthen mounds in the area (NPS 1986a). The Woodland Period has been defined by more population density and the establishment of large settlements, expanded use of resources and interregional trade in cultivated foods and exotic items, and new technology, specifically the widespread adaptation of pottery manufacture and use.

The Mississippian Period marked a transition to intensive agricultural production based on maize cultivation, consumption, and storage. More sophisticated political and socioeconomic organization resulted from expanded, dense settlement with broad

trade and communication networks and greater accumulation of material goods. Settlements throughout the area known as the American Bottom had multiple mounds, including the area of St. Louis. Of the “town-and-mound complexes,” the Cahokia site in eastern Illinois (within ten miles of St. Louis) was the largest Mississippian community and the largest prehistoric site north of Mexico. From A.D. 900-1400, Cahokia was a major center of the Mississippian cultural tradition. As many as 40,000 people lived in the ancient city (Primm 1981).

After 1250 A.D., the cultural significance and influence of Cahokia diminished. Cultural centers shifted to the south, trade networks ceased, large settlements were abandoned, and population declined. When European settlers arrived, the Native American population consisted of Illini Confederacy tribes, with between six and seventeen tribes or bands, including the Cahokia and Tamaroa, who lived in the immediate vicinity. Members of other tribes who lived to the west of the area, particularly the Missouri and Osage, ventured into the locality to hunt and exploit riverine resources (Primm 1981; Costa 2000).

THE CITY OF ST. LOUIS

The Spanish were the first European explorers to enter the central Mississippi River Valley. Yet the French explorers led the way to early Euro-American settlements. In 1682, Robert Cavalier, Sieur de La Salle claimed the Mississippi River Valley through to the Gulf of Mexico for the French, naming it Louisiana. In 1686, the first European settlement on the Mississippi was established at Arkansas Post. By 1699, Cahokia, Illinois was founded as a mission to the Illini Indian tribes who lived there. Soon, other settlements sprang up for religious, trade or farming purposes, including Kaskaskia (1703), New Orleans (1718), Fort de Chartres (1718), Prairie de Rocher (1722), and Ste. Genevieve (c. 1735). As a result of the French and Indian War and the 1763 Treaty of Paris, France ceded its land holdings east of the Mississippi to England, and its land to the west to Spain. Merchant Pierre Laclède Liguist and his “stepson” Auguste Chouteau traveled northward from New Orleans to establish a fur trading post along the Mississippi River under exclusive rights (Primm 1981). They selected a site on the west side of the river, protected from river flooding

by a limestone bluff to build the village of St. Louis. The site included the current Memorial grounds. The village was organized in a typical French colonial layout with a grid pattern of streets, a public square on the riverfront and outlying agricultural lots. By 1770, there were 115 houses in the village (NPS 1954).

In 1800, the Spanish ceded the Louisiana Territory back to France, and in turn the French sold the Louisiana Territory to the U.S. in 1803. U.S. authorities arrived in 1804 and a military presence was established. After the arrival of the Americans, St. Louis continued to develop as an important fur trading center and port along the river, with flatboats and keelboats dominating the transportation of goods. Lewis and Clark embarked on their famous expedition in 1804 and returned two years later to St. Louis to much fanfare. By 1817 the first steamboat arrived in St. Louis, marking the beginning of an era of waterway expansion. Additionally, stagecoach lines developed, connecting St. Louis to more locations. By 1808, there were approximately 1,000 people in the city of St. Louis; by 1820, the population had tripled (NPS 1954). In 1823, the town was incorporated as a city.

Between 1804 and 1840, the built environment of St. Louis reflected its population boom. Large civic buildings were constructed, as well as the first Catholic Cathedral in 1818, and the second Cathedral, still standing adjacent to the Memorial grounds, in 1834. St. Louis also saw its share of high-style architectural centers including the Old Courthouse, constructed beginning in 1839. Into the 1830s, the population continued to grow, creating perpetual overpopulation and a strain on city infrastructure. With immigrants constantly pouring through St. Louis in order to follow pioneering routes to the West, St. Louis became a true gateway.

By the 1840s, St. Louis had two brickyards supplying building materials for over 1,000 new houses built each year. Despite the transition to brick and cast iron building technology, the disastrous Great Fire of 1849, which began on a riverboat, destroyed 20 city blocks. Although the Cathedral and the Old Courthouse were spared, the majority of the riverfront lots were rebuilt in the 1850s. The city took the

opportunity to improve and expand the wharf and civic centers. The streetscape redeveloped with classical and elaborated architecture, popularly used on five- and six-story commercial buildings and hotels, creating a more monumental and permanent urban character (Sandweiss 2001). By the late 1850s, St. Louis was connected by rail and stagecoach to several points to the East and to western and southern Missouri.

After the Civil War, St. Louis further developed its transportation infrastructure. River traffic had been disrupted during the war, and railroads had taken precedence nationwide as the favored mode of transport for passengers and freight. The city was reliant on ferries and steamboats to transport goods across the river from Illinois, and river traffic was continually congested. Chicago, with its excellent rail links to the east and west, took precedence over St. Louis as the premiere city of the Midwest. In order to try to recapture its former importance as the region's leading city and transportation center, some forward-thinking residents of St. Louis supported the construction of the Eads Bridge, providing a critical link between the rail lines on the east and west sides of the Mississippi River. Expansion of railroad facilities continued into the 1880s with the introduction of elevated tracks along the levee in 1882.

While St. Louis grew in area and in population, the old city center along the riverfront, bypassed by traffic over the Eads Bridge, fell into decline. Higher rents and inaccessibility deterred new commercial development in the riverfront area. The riverfront district streets were too narrow for streetcars, thus the expansion of the streetcar system attracted development in other parts of the city. In the 1890s, the conditions of the district propelled suggestions for its redevelopment, potentially to include a monument to Thomas Jefferson or to celebrate the centennial of the Louisiana Purchase (NPS 1954).

While St. Louis continued to grow rapidly into the 20th century, the Civic League advocated for "City Beautiful" redevelopment incorporating parks, parkways, and grand civic centers, and the City Planning Commission organized in 1907 attempted to create a plan

for the city center (Primm 1981; Tranel 2007). Attempts were unsuccessful, and the inner city remained a blighted area. Further deterioration of the buildings and levee district persisted until the 1930s.

ESTABLISHMENT OF THE MEMORIAL

In 1933, Luther Ely Smith, a prominent lawyer in the city, came up with a plan for a memorial along the riverfront, envisioning a structure that was "transcending in spiritual and aesthetic values." Viewed both as an improvement to the downtown and as a means to create jobs during the Depression, city leaders embraced the idea and established the Jefferson National Expansion Memorial Association (JNEMA). The following year, the project garnered federal support with the authorization of the United States Territorial Memorial Commission. In 1935, President Franklin D. Roosevelt signed Executive Order 7253, authorizing the Secretary of the Interior to acquire and develop Jefferson National Expansion Memorial on the site of Old St. Louis. The riverfront parcel was the country's first National Historic Site as designated under the Historic Sites Act of 1935 (NPS 1996a).

Over the next several years, significant milestones were met in the definition and development of the Memorial. A superintendent, John Nagle, was named and an office was opened in St. Louis in 1936. Nagle began by ordering his team of historians to study the value of the existing buildings on the site. They defined the purpose of the Memorial as commemoration of the westward expansion of the U.S., with emphasis on the Louisiana Purchase. As a result, Nagle viewed the only buildings on the site worthy of preservation to be the Old Courthouse, the Old Rock House, and the Old Cathedral. By 1942, the majority of the buildings on the site had been razed, clearing the way for the new memorial.

COMPETITION FOR THE MEMORIAL

In 1947, the JNEMA announced a national design competition for the Memorial. Luther Ely Smith asked George Howe, a prominent Philadelphia architect, to serve as a professional advisor on the process. The competition program included the following elements: an architectural memorial or memorials to Thomas Jefferson; preservation



Figure 3.1 Eero Saarinen, Stage One Submission, Plan View, 1947.

of the site of Old St. Louis; landscaping; an open-air campfire theater; recreation or reproduction of a few typical old buildings; a museum interpreting the movement west in the United States; a living memorial to Jefferson’s vision of greater opportunities for men of all races and creeds; recreational facilities on both sides of the river; parking facilities; relocation of the railroad tracks through the site; and placement of an interstate highway. The submissions were also directed to address the relationship between the Memorial area and the cities of St. Louis and East St. Louis.

The competition booklet, including the background, rules, and regulations, was released to the public on May 30, 1947; by the deadline three months later, the JNEMA had received 172 entries. After three days of deliberation, five finalists were selected for the second phase of the competition. Among the finalists was a collaborative design team

headed by Eero Saarinen of Saarinen, Saarinen and Associates, with Dan Kiley identified as landscape architect. Eero Saarinen, the son of modern architect Eliel Saarinen, grew up within the artistic community at the Cranbrook Academy in Michigan where he developed his theories on modern design and views on the integration of architecture, landscape architecture, and art. Dan Kiley studied landscape architecture at Harvard in the 1930s, where he was exposed to modernism through the work of architect Walter Gropius. The design conceived by Saarinen and Kiley featured a monumental steel and concrete arch set within a wooded landscape, a symbolic expression of the “Gateway to the West” (NPS 1996a).

Following several changes to the program, the JNEMA solicited the second round of submissions. After deliberation, the Saarinen-Kiley design was chosen unanimously. The concept envisioned an arch in the form of

an inverted catenary curve along the edge of the riverfront beside the levee. Placed slightly off the center of the axis with the Old Courthouse, the Gateway Arch was intended to frame an unobstructed view between the historic building and the river. As conceived by Saarinen and Kiley, the landscape was designed as an urban forest dominated by one or two tree species. Built features were to include a theater, a pioneer village exhibit, a museum devoted to architecture, a second museum devoted to history, and two restaurants. The final jury report detailed why the Saarinen-Kiley design was selected: “It contains intrinsically the very features aspired to by the Program... a memorial, a park, balanced harmony, and fine groupings of buildings... The entire concept, full of exciting possibilities for actual achievement, is a work of genius, and the memorial structure is that of high order which will rank it among the nation’s greatest monuments” (NPS 1996a).

Although Saarinen and Kiley were awarded the design for the Memorial in 1948, it would be more than a decade before construction began. The delay was due both to funding issues and challenges presented by the railroad tracks that ran through the site. During this time, the Memorial grounds were used as a municipal parking lot, routinely accommodating as many as 3,500 cars per day (NPS 1996a).

EVOLUTION OF THE DESIGN

Over the next eleven years, the Memorial design evolved. The issue of how to handle the railroad on the site was ultimately central to the changes in the design, and in 1957 a revised plan was presented to the National Park Service (NPS). The new scheme placed the railroad tracks in two open cuts, with three short tunnels at the north and south and near the center of the site. The Gateway Arch was relocated from along the levee to a site higher on the bluff, on axis with the Old Courthouse. The tracks then ran in a tunnel between the river and the monument, with a grand staircase envisioned to connect the Gateway Arch to the riverfront.

Beyond resolving the railroad issue, the 1957 plan, created together by Saarinen and Kiley, presented a new vision for the Memorial. While the concept of the Gateway Arch in a

wooded landscape remained unchanged, the balance of the site was unified and the modern form and geometry of the curved Gateway Arch was reiterated in the paths that cut through the landscape. Allées of trees bordered the walkways and ran through Luther Ely Smith Square, framing the view between the Old Courthouse, the Gateway Arch, and the river. In contrast to the modern formal elements of this design, “romantic forested areas” with lagoons and winding paths were envisioned northwest and southwest of the Gateway Arch (NPS 1996a). Finally, the Museum of Architecture and the pioneer village, both included in the competition entry, had been removed. Saarinen stated about their revised plan: “The spirit of this new design is the same as that of the design which won the national competition 10 years ago. The Arch – the major element of the plan – is in fact unchanged from that of the original design and only in the plan of the Memorial, the setting for the approaches to the Arch and the placement of other buildings on the site have changes been made... We feel that we have now related all the major elements of the Park to each other in a more unified way” (Architectural Record 1957).

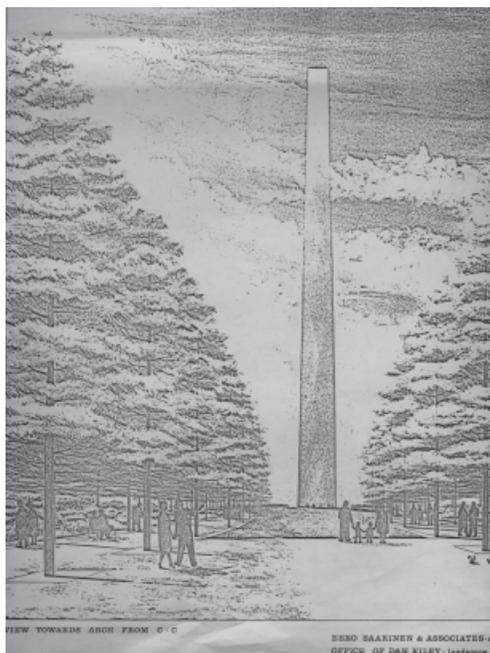


Figure 3.2 Office of Dan Kiley, Perspective Image, watercolor, December 1962.

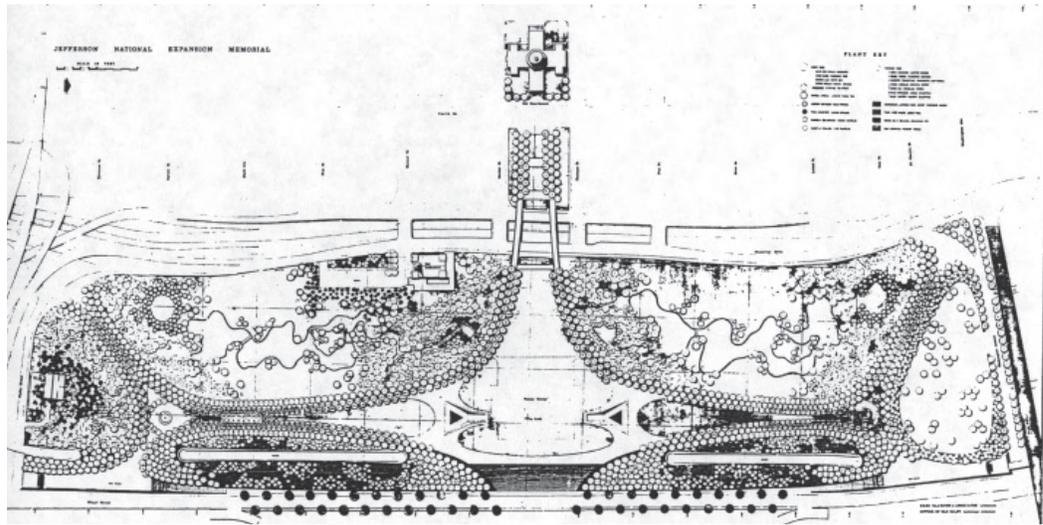


Figure 3.3 Office of Dan Kiley, Final Conceptual Planting Plan, 1964, approved by NPS, February 1966.

Further refinements were made to the design through the development of the NPS master plan for the site, released in 1959. Saarinen and the National Park Service together concluded that the Museum of Westward Expansion should be placed below-grade, so as not to interrupt the modern setting for the Gateway Arch. The only buildings left on the site were to be the Old Courthouse, the Old Cathedral, and the Old Rock House. Ultimately, the Old Rock House was dismantled for relocation, due to the construction of the railroad tunnels, but was never reconstructed. On-site parking was to be restricted to the north and south ends of the site.

DETAILED DEVELOPMENT OF THE LANDSCAPE DESIGN AND CONSTRUCTION OF THE MEMORIAL

Construction of the Memorial began in 1959, with the groundbreaking for the Gateway Arch and excavation for the railroad tunnels. By early 1963, the first stainless steel section of the Gateway Arch was in place, and in 1965 the structure was complete. Between 1963 and 1967, a unique transportation system was installed within the Gateway Arch that allowed visitors to be transported to an observation deck at the top of the structure. The Museum of Westward Expansion was constructed

beneath the Gateway Arch—as envisioned by Saarinen in the revised plan—between 1974 and 1976.

While construction of the Memorial was underway, Kiley’s development of a detailed planting and landscape plan began in earnest. Although several schemes were considered for the planting plan, each concept juxtaposed an open area around the base of the Gateway Arch with wooded areas outside of the major axes. In 1961, major events shaped the progress of the landscape plan: budget constraints emerged and Saarinen died suddenly. Although the original Saarinen-Kiley concept that juxtaposed meadow and forest remained, the dense woodlands were scaled back. Instead of filling the majority of the site, closely spaced trees lined the walkways, framing views of the Gateway Arch. Kiley selected the tulip poplar due to its soaring height, large trunk, and fast rate of growth; this species bordering the paths would provide the forested effect that Kiley desired (NPS 1996a). A variety of tree species, including both flowering and canopy trees, were planned for the areas around the north and south reflecting ponds. Kiley’s final planting plan was approved by the National Park Service in 1966.

In the years that followed, the essential concept of the Saarinen-Kiley plan was adhered to with only slight deviations. The National Park Service reconsidered using some of the tree species Kiley had specified. The most significant change to the plan was the substitution of the Rosehill white ash for the tulip poplar along the walkways. In addition, the National Park Service decided to construct the grand staircase in two phases, beginning with the outer sections and then finishing with the center. The pedestrian overpasses, studied by Saarinen and later investigated by the architectural firm HOK (Hellmuth, Obata and Kassabaum), have yet to be implemented. Saarinen's and Kiley's plans for Luther Ely Smith Square, including allées of trees framing the view between the Old Courthouse and the Gateway Arch, were not carried out. Instead, a temporary design completed in 1951 by the city of St. Louis remains (NPS 1996a).

Although some of the landscape elements prescribed by Saarinen and Kiley were not fully realized, their concept is clear. The monumental modern Gateway Arch works in concert with the modern landscape, as the guiding geometry—the catenary curve—appears in the staircase and the paths along the north-south axis. The curve is balanced by the strong axial relationship between the Old Courthouse, the Gateway Arch, and the river. The urban forest, envisioned by Saarinen and Kiley from the earliest planning stages, stands in contrast to the meadow at the base of the Gateway Arch. In its totality, Jefferson National Expansion Memorial expresses the unique Saarinen-Kiley vision for the site.

Historic Buildings, Structures, Sites, Objects, and Districts

The following discussion inventories historic buildings, sites, structures, objects, and districts within the Memorial boundary. The locations of these elements are identified in Figure 3.4.

JEFFERSON NATIONAL EXPANSION MEMORIAL

Jefferson National Expansion Memorial was nominated to the National Register of Historic Places in 1966 and accepted in 1977. The listing identifies the property as a historic

Historic Property Definitions

The National Park Service uses a series of definitions to categorize historic properties, and these are derived from the National Register of Historic Places and the *Secretary of the Interior's Guidelines for the Treatment of Historic Landscapes*. These definitions will be employed in this document:

- **Building:** a structure created principally to shelter any form of human activity, such as a barn, house, church, or hotel.
- **Site:** the location of a significant event; a prehistoric or historic occupation or activity; or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archeological value, regardless of the value of the existing structure.
- **Structure:** a functional construction usually made for purposes other than creating human shelter, such as tunnels, bridges, oil wells, or dams.
- **Object:** primarily artistic in nature, or relatively small in scale and simply constructed. Although an object may be moveable by nature or design, it is associated with a specific setting or environment, including sculptures, boundary markers, or statues.
- **District:** possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development, such as a college campus, central business district, fort, or sprawling ranch.
- **Landscape:** a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values (NPS 1990).

district and includes the entire grounds of the Memorial, paying particular attention to three historic structures: the Gateway Arch, the Old Courthouse, and the Old Cathedral. It identifies the property's period of significance as extending from 1935, when the Memorial was established, through 1966 when the nomination was drafted. The nomination lists the status of the property as a "work in progress."

In 1987, the property was designated a National Historic Landmark (NHL). The Memorial was thought to be so important and transcendent in its design elements that the designation was made prior to the expiration of the usual 50-year waiting period, under the exception in the criteria that states, "a property achieving national significance within the past 50 years [may be designated] if it is of extraordinary national importance." The boundaries of the NHL are slightly different than the previously designated historic district, including the portion of the Memorial east of Memorial Drive, between Poplar Street and Eads Bridge. The nomination identifies the property's period of significance as spanning from 1947, when the Saarinen- Kiley competition entry was selected, through the date that the major construction was complete in 1986.

THE GATEWAY ARCH

The Gateway Arch, the centerpiece of the Memorial design, was conceived by Eero Saarinen in 1947 as a symbolic gateway to the West. Although the placement of the Gateway Arch and the design of the grounds evolved over the next several decades, the original design of the Gateway Arch endured with little change. An inverted, weighted catenary curve, the Gateway Arch soars 630 feet from its base on a bluff above the Mississippi River. It is constructed of a series of stacked triangular stainless steel sections with a stressed steel skin. The latter feature allows the exterior materials to carry the structural load without major interior framing. Inside the legs of the Gateway Arch, a unique transportation system carries visitors to an observation deck at the top of the monument.

Entrance ramps at the base of the Gateway Arch lead into the subterranean Museum of Westward Expansion and visitor center.

Conceived by Saarinen and Kiley in 1959, their placement beneath the Gateway Arch solidified the Saarinen-Kiley concept of a unified landscape. The museum was designed by Aram Mardirosian and completed in 1976. In addition to the museum gallery, the complex includes a lobby, visitor loading areas for the Gateway Arch's transportation system, and two theaters—North (later Tucker) Theater and South (later Odyssey) Theater. Additions to the visitor center and museum have included the American Indian Peace Medal Exhibit, two museum stores, and a ticket purchasing area.

The Gateway Arch is significant for its commemoration of Thomas Jefferson's role in the nation's westward expansion. In addition, it is significant as a triumph of architecture and engineering. It conveys modernist precepts, using the latest materials and sculptural forms available in the late 1950s and early 1960s to develop a design that specifically responds to the site and fully integrates architecture and landscape architecture. As stated in the significance statement of the NHL nomination, "Its structural system had never been attempted before on so massive a scale. Its highly complex and subtle design based on a weighted catenary is unique in architecture. The Arch is a symbolic architectural expression of such simplicity and modernity that even today . . . it still seems avant-garde."

THE GATEWAY ARCH GROUNDS

The Gateway Arch is sited within a distinctly modern landscape. The product of a collaboration between Saarinen and Kiley, the landscape complements, enhances, and echoes the graceful lines of the structure. The two men applied geometrical precepts and classical landscape design elements to create a setting that is both spectacularly and subtly appropriate. The scale, impact, and design of the grounds constitute an essential mooring for the world-famous Gateway Arch.

THE NORTH AND SOUTH OVERLOOKS

The scenic overlooks were designed to provide visitors with a vantage point from which to view the Mississippi River. They were also originally intended to house museums devoted to the role of the railroad and the river in regional transportation. Although the museums were never realized, the overlooks

reflect the Saarinen-Kiley concept and thus contribute to the significance of the National Historic Landmark.

GRAND STAIRCASE

The Grand Staircase provides both a physical and a visual connection between the Gateway Arch and the Mississippi River. Mirroring the curve of the Gateway Arch, the staircase is a symbolic representation of the movement of settlers through St. Louis, the gateway to the West. Although the relationship between the treads and risers was modified in its final design, it is representative of the Saarinen-Kiley concept and is in its original location. It thus contributes to the significance of the National Historic Landmark.

RAILROAD TUNNELS

The north and south railroad cuts and three tunnels were designed by Saarinen, and were important components of his concept for the site. Constructed between 1959 and 1962, the entrances to the tunnels are curved, reflecting the geometry of the Gateway Arch. The north tunnel (548 feet long), the center tunnel (960 feet long) and the south tunnel (360 feet long) carry the railroad through the site in conjunction with the open north and south cuts, which have poured concrete walls and are 720 feet and 840 feet long, respectively. The railroad tunnels and concrete floodwalls, reflecting the Saarinen-Kiley design concept, contribute to the significance of the National Historic Landmark.

THE OLD COURTHOUSE

The Old Courthouse was constructed in several phases between 1839 and 1862. The three-story Greek Revival brick and stone structure is cruciform in plan and has large classical porticoes on all four elevations. A central rotunda is capped by a Renaissance Revival cast iron dome and lantern. The lightweight cast iron structure of the dome was patented by the architect, William Rumbold. It was one of the first uses of this engineering technique in the United States. The same materials were used, in conjunction with a different patent, in the dome of the U.S. Capitol Building in Washington, D.C., which was built concurrently with the Old Courthouse dome. The St. Louis project was the first cast iron dome to be completed in

the U.S. The inside of the dome is decorated with elaborate murals. The surrounding reproduction sidewalks and fence have also been identified by the National Park Service as contributing to the interpretation of the Old Courthouse.

The building's period of significance spans from 1839 through 1930. It is significant both for its architectural and engineering merits, and also as the site of important historic events. Early in its history, the courthouse was a public gathering space for people planning their travel west. More notably, the structure was the site of the historic Dred Scott case in which Scott, a slave, sued for and was awarded his freedom. Freedom was later taken away from the Scotts by an appeal to the Missouri Supreme Court, and the case was ultimately decided by the U.S. Supreme Court in *Dred Scott v. Sandford* in 1857. In the infamous decision of the court, persons of color were denied citizenship. Slavery in the Western territories was deemed to be a property right that could not be extinguished by legislation.

THE OLD COURTHOUSE SUNDIAL

Constructed of bronze, copper, iron, and granite, the Old Courthouse sundial is the only surviving detached exterior feature associated with the courthouse. The circular bronze sundial face has Roman numerals and is protected by a copper cover. The National Park Service has determined that the object is eligible for listing in the National Register as a contributing element to Jefferson National Expansion Memorial. Its period of significance corresponds with that of the Old Courthouse.

Cultural Landscapes

BACKGROUND

Jefferson National Expansion Memorial was acknowledged initially for the significance of its outstanding architecture and engineering and for its memorialization of the nation's westward expansion. The landscape was recognized in early documentation as a vital part of the Memorial, but a detailed documentation of the significance of its landscape design was lacking for many years. To rectify this gap in the history of the designed landscape, the National Park Service, in collaboration with landscape architects

Gina Bellavia and Gregg Bleam, undertook a Cultural Landscape Report, published in 1996. The Cultural Landscape Report provided a detailed history of the designed landscape and its character-defining features, an inventory and condition assessment of existing landscape features, and an updated significance of the Memorial to include the designed landscape. The CLR is currently being updated to reflect current conditions at the Memorial. The Cultural Landscape Report provides the basis for the majority of the information contained in this section of the report.

SIGNIFICANCE

According to the National Register nomination for the site, Jefferson National Expansion Memorial is nationally significant because it memorializes the nation's expansion to the west as well as the people who undertook this expansion, including Thomas Jefferson. St. Louis, Missouri, the nexus of westward expansion and the region's economic center in the 19th century, was the natural choice for the Memorial's location. The Memorial is also significant for the magnificent and unique Gateway Arch designed by Eero Saarinen. The Gateway Arch and its significance are discussed in detail above under Historic Buildings, Structures, Sites, Objects and Districts.

The Memorial is also significant as the work of master designers (both architect and landscape architect) and for its importance as a work of landscape architecture. Learning from Walter Gropius and other modern architects while at Harvard in the 1930s, Dan Kiley was at the forefront of modern landscape design. His participation in Jefferson National Expansion Memorial represented his first major national project and was part of a close collaborative relationship with Eero Saarinen that lasted until Saarinen's death. Other important projects on which the two collaborated include Dulles Airport and the J. Irwin Miller residence in Columbus, Indiana. The Miller House was designated a National Historic Landmark in 2000.

The Saarinen-Kiley concept embodies important principles of modern design – the use of modern materials, simple, geometric forms, and design integration. The latter is of particular importance at the Memorial. While Saarinen developed the overall vision for the

site, including the Gateway Arch and the visual relationships between the monument, the Old Courthouse, and the river, Kiley was a part of the design team from the outset. He took Saarinen's vision a step further, defining a landscape that in its simplicity reflects the simplicity of the Gateway Arch. His specification of a dominant species of tightly spaced trees served to accent the simple form of Saarinen's Gateway Arch. The Gateway Arch and the landscape are knitted together to form a single modern fabric that defines the Memorial.

The period of significance for the Memorial's landscape is 1947-1986, beginning the year Saarinen won the competition and ending the year that major construction was considered complete. The beginning of the period of significance is marked by the sponsorship of the national design competition by the Jefferson National Expansion Memorial Association. Saarinen created a team of five—architect, landscape architect, draftsman, aesthetic designer, and sculptor—and this team was chosen from a large field of competitors for their design of a monumental symbolic arch. The construction of the Memorial did not begin until 1959, and the major features actually realized were not all in place until 1986.

Kiley's involvement with the project ended after the National Park Service accepted his design development drawings in 1966. Several offices—including the NPS landscape architecture offices in the San Francisco Planning and Service Center and the Denver Service Center, as well as the St. Louis firm of Harland Bartholomew and Associates—later contributed construction documents to the project; and so the design details for the Memorial evolved over many years and represented the work of many individuals. All subsequent designers were required by the National Park Service to respect the overriding design concepts expressed in the drawings of Saarinen and Kiley. The geometrically ordered planting plan was an essential component of the Kiley landscape design and is characteristic of many of his major works; and that aspect of the design was retained. The integrity of the landscape, or in other words, the landscape's ability to

convey its historic significance, is measured by the degree to which it resembles the vision set forth by Saarinen and Kiley. Though some details in the landscape design were not specified or were changed due to budgetary or practical considerations, the overall concepts of the Saarinen-Kiley plan are evident at the Memorial today (Hughes 1999).

LANDSCAPE CHARACTERISTICS

Landscape characteristics are part of a classification system for describing and analyzing the landscape's physical qualities. According to the National Park Service, landscape characteristics are "processes and physical forms that characterize the appearance of a landscape and aid in understanding its cultural value" (NPS 1998a). When a particular feature existed at the time of the landscape's period of significance and also retains integrity to that period, then it enhances the landscape's significance. The National Register Bulletin *How to Apply the National Register Criteria for Evaluation* states that "integrity is the ability of a property to convey its significance. . . . Historic properties either retain integrity (convey their significance) or they do not. . . . The retention of specific aspects of integrity is paramount for a property to convey significance." The seven aspects of integrity are location, design, setting, materials, workmanship, feeling, and association. The Memorial landscape possesses integrity of all seven aspects.

The classification system for landscape characteristics includes broad categories such as natural and constructed setting, spatial organization, topography, buildings and structures, constructed water features, circulation, vegetation, views and vistas, and small-scale features. Landscape characteristics that enhance the historic character of the Memorial are those that were determined to retain integrity to the period of significance of the landscape (1947-1986). Key features are discussed below.

THE NATURAL AND CONSTRUCTED SETTING

MISSISSIPPI RIVER The Mississippi River dominates the natural setting of the Memorial. It is essential to the conception of the city as a gateway. Although the

river is prone to seasonal flooding, it contributes to the integrity of the Memorial's historic landscape.

WEST OF THE RIVER The urban fabric that surrounds the Memorial on the north, west, south, and east sides is also an important feature. Eads Bridge, a National Historic Landmark, borders the Memorial to the north. Constructed in the 19th century as a rail bridge to connect St. Louis and East St. Louis, it is representative of the role commerce played in the establishment of the city of St. Louis. Laclede's Landing is located north of Eads Bridge. This district retains the warehouse/industrial architectural style and early street grid that once characterized the St. Louis riverfront. The portion of downtown St. Louis west of the Memorial and north of the Old Courthouse is characterized by a mixture of low, mid, and high-rise turn-of-the-century and contemporary buildings, within a tightly spaced urban grid. The area west of the Memorial and south of the Old Courthouse is less dense and is dominated by large modern buildings. West of the Old Courthouse, the greensward of the Gateway Mall provides views east that include the Old Courthouse and the Gateway Arch. South of the Memorial, Chouteau's Landing is made up of a series of late 19th to early 20th century warehouse buildings, two to six stories in height. An elevated railroad trestle cuts through the district, running above a portion of South First and Second Streets. Views of the river from Chouteau's Landing are obscured by the levee, and views of the Memorial grounds and the Gateway Arch are partially blocked by the highway ramps coming off of the Poplar Street Bridge. East of the Memorial, Leonor K. Sullivan Boulevard provides access to the riverfront trails, businesses, and parking.

Other important features in the setting of the Memorial on the west side of the river include the Old Cathedral, an active Catholic church with its associated parking lot, and the railroad tracks which are maintained through a perpetual easement with Terminal Railroad Association. Overall, the land uses on the west side of the river that surround the site contribute to the significance of the landscape.

EAST OF THE RIVER The East St. Louis addition is made up of roadways, and a large, densely wooded parcel. A levee borders the area to the west, obscuring views of the Gateway Arch and the Memorial grounds. Railroad tracks run just east of the levee, and Front Street divides the levee and the tracks from the eastern portion of the East St. Louis addition. Martin Memorial Park is located to the north of the potential East St. Louis addition to Jefferson National Expansion Memorial. It contains a large circular water impoundment and fountain as well as a viewing platform which is on axis with the Gateway Arch.

South of Malcolm Martin Memorial Park is a wooded area. A portion of this area is contained within the East St. Louis addition. It is characterized by dense trees, shrubs, and grasses and is encircled within a fence. Abandoned rail lines and roadways cut through this landscape.

The landscape north of the East St. Louis addition is largely industrial. It is dominated by the Cargill plant and its associated grain elevator/conveyor belt. Located on Front Street, these structures are visible across the river from the Memorial grounds. Additional low scale industrial buildings are located north and east of the Cargill plant. At the north end of this area, along the water, is the Casino Queen, a sprawling casino and hotel complex. While the built landscape on the east side of the river does not enhance the integrity of the Memorial, the open space within Malcolm Martin Memorial Park maintains the critical view to the Memorial from East St. Louis.

TOPOGRAPHY

The Memorial landscape was created with a substantial amount of imported fill material that raised its elevation more than sixty feet above the Mississippi River. From a generally flat expanse of land near the Gateway Arch, the ground rises to the north and south of the site, with designed landforms near the railroad to hide the tracks, and near Memorial Drive where berms have been created paralleling the highway. The topography drops dramatically at the east edge of the site, where the Grand Staircase provides access to the river. The site's lower elevations are located at the service

areas. The site's topographic depressions, in part contained by retaining walls, provide access to underground tunnels and the visitor center. Constructed overlooks, approximately 54 feet higher in elevation than Leonor K. Sullivan Boulevard, create the high points at the north and south ends of the site.

The topography was an essential component of the Memorial's design, and was carefully sculpted. The designed landforms fulfill both a functional requirement (to hide the railroad tracks and service areas) and an artistic vision. The ponds, overlooks, and berms orchestrate views and provide drainage as well as defining spaces within the Memorial. The designed topography of the ground plane contributes to the spatial definition of the Memorial landscape by enhancing the monumental nature of the Gateway Arch, and by creating important distinctions between it and the service areas on the periphery, the railroad tracks, and the more intimate pond areas to the north and south.

SPATIAL ORGANIZATION

The spaces at the Memorial emphasize a contrast between the open monumentality of the Gateway Arch landscape and the overlooks with their long vistas, and the more enclosed human-scale spaces under the trees. A major organizing relationship in the spatial order of the site is the axial connection between the Gateway Arch and the Old Courthouse; this east-west axis orchestrates a view from the city towards the Mississippi River.

The north-south alignment of the site's pathways organizes movement throughout the Memorial. The path system was designed to connect important places within the Memorial, and to provide carefully directed views towards the Gateway Arch. The tightly spaced trees along the paths create a canopy that encloses the pedestrians in a setting with a more intimate scale.

Symmetry is another important organizing feature of the landscape. The curving pathways, allées of trees, irregular ponds, and structures are ordered such that the northern portion of the grounds mirrors the southern end. This symmetry enhances the formality established by the major north-south and east-west axes.



The Old Courthouse as viewed from Luther Ely Smith Square.



View west from Malcolm Martin Memorial Park towards the Arch grounds.



Looking west on North Second Street in Laclede's Landing.



View from the top of the Gateway Arch showing conditions along the East St. Louis riverfront.



The Cargill grain elevator and its conveyor belt.



Site topography is used near the railroad to hide the tracks.



Sculpted landscape forms near the Gateway Arch and ponds.



East-west axis connecting the city to the Mississippi River through the Gateway Arch.



View north towards the Gateway Arch from the south end of the Memorial.



Dense enclosure created by ash tree plantings.



A view of the Gateway Arch as seen from east of the levee in East St. Louis.

The pond areas provided an informal and varied spatial character; though generally open in feeling, the pond areas were nevertheless planted with scattered tree massings that provide the area with smaller intimate places.

The major concepts of the Memorial—the historical importance of the movement from east to west, and the city’s crucial relationship to the river—are expressed through the spatial organization of the design. In addition, the designed contrast between the monumental spaces of the Gateway Arch environs and the intimate spaces in the urban forest continue the trajectory of the narrative essential to the story of westward expansion.

VIEWS AND VISTAS

ESSENTIAL AXIAL VIEWS The east-west axis through the Memorial was conceived by Eero Saarinen and Dan Kiley early in their design at the insistence of the competition judges and is a key organizing principle of the landscape. The expansive vista connects the Old Courthouse, the Gateway Arch, and the Mississippi River, emphasizing the symbolic form of the arch as a gateway to the West. From the base of the Gateway Arch, views of the Old Courthouse are framed by the trees that border Luther Ely Smith Square. Due to the sculpted berm between the Gateway Arch and Memorial Drive, the base of the Old Courthouse is obscured.

The view east from the Old Courthouse through the Gateway Arch to the river is framed by high-rise buildings on Chestnut and Market Streets, and by the rows of trees that run along the edges of Luther Ely Smith Square. The simple geometry of the pathways through the square reinforces the visual axis, carrying the eye through the landscape to the Gateway Arch and the river. The strength of this axis serves to unify the Memorial grounds into a single composition that includes constructed elements, such as the Gateway Arch and designed landscape, as well as natural features such as the Mississippi River.

Similar to the east-west axis, the north-south axis and associated views were key elements of the Saarinen-Kiley design. Heavily controlled by path alignments and plantings, the direct views towards the Gateway Arch from either

the north or south emphasize the immense verticality of the monument. These views were consistent organizing principles throughout the evolution of the Memorial’s design and are important contributing elements to the historic landscape. Views north and south from the base of the Gateway Arch are dominated by the rows of ash trees; due to topography and vegetation, the structures at the north and south ends of the Memorial are not visible.

The designed views and vistas, both east-west and north-south, are critical to the Saarinen-Kiley concept, working in concert with and enhancing the spatial organization of the site. The views help establish crucial connections between the Memorial, the city, and the river. They also control visitors’ perception of the Gateway Arch by framing its immense size and sculptural qualities. The important axial relationships of the Memorial design are enhanced, in part, through the designed views and vistas that provide perspective on the symmetry of the landscape.

ADDITIONAL VIEWS AND VISTAS The view west from East St. Louis is also important to the character of the historic landscape. Critical to the understanding of the Memorial as a gateway to St. Louis and further west, the view of the Gateway Arch is partially obscured by the levee on the east side of the river. The viewing platform in Malcolm Martin Memorial Park provides unobstructed views of the Gateway Arch and the Memorial grounds.

The views from the north and south reflecting ponds were shaped by the designed topography and plantings. The groupings of trees and contrasting open areas were intended by Saarinen and Kiley to obscure views from certain vantage points, but to allow dramatic views of the Gateway Arch from other points around the ponds. These views reflect the design concept and thus contribute to the significance of the landscape.

The North and South Overlooks were designed by Saarinen and Kiley to provide expansive views of the Mississippi River and the Gateway Arch. These views illustrate the variety and complexity of the Memorial’s

urban landscape - the soaring Gateway Arch, the expanse of the Mississippi River, the industrial uses on the river's east bank, and the Memorial's urban forest. As such, they are important elements within the cultural landscape.

BUILDINGS AND STRUCTURES

The Gateway Arch, the Old Courthouse, the Museum of Westward Expansion, the North and South Overlooks, the Grand Staircase, and the North and South Railroad Tunnels are contributing features to the historic landscape. They are discussed in detail above under *Historic Buildings, Structures, Sites, Objects, and Districts*. The Old Cathedral is discussed in detail in Appendix C.

VEGETATION

The original Saarinen-Kiley design called for a single-species planting along the pathways of the Memorial. Through the placement of triple rows of closely spaced trees, Saarinen and Kiley created an urban forest within the bounds of the Memorial. As Saarinen and Kiley intended, the use of a single species serves to unify the landscape. Although they specified tulip poplar trees along the Memorial's paths, the National Park Service replaced the design's planting concept for the tulip poplars with a new tree: the Rosehill ash. The habit of the Rosehill ash is substantially different from that of a tulip poplar; the rounded habit of the ash does not fully replicate the tall upright character of the tulip poplar. Many of the trees have been replaced in kind since 1981, but because the dominant species planting—and the planting alignment—survive from the design concept, the planting is a contributing feature of the historic landscape. This design of the urban forest is a perfect marriage between the narrative of westward expansion and modernism: the simplified palette of trees and their geometrical alignment unify the planted landscape with the Gateway Arch into a designed whole and are crucial to the character of the landscape.

Circles of bald cypress trees were part of the planting design concept in the Saarinen-Kiley plan beginning in 1947. These two circles, one in the northwest and one in the southwest quadrant of the Memorial, were originally

designed to be interpretive areas thick with trees. In the final planting, the circles contained far fewer trees than indicated in the original design. Despite the reduction in the number of bald cypress trees, these circles were key features in the Saarinen-Kiley concept.

In contrast to the other single-species plantings throughout the Memorial, the service area plantings are diverse and include maple, hawthorn, zelkova, honeylocust, mugo pine, and wintercreeper. There were some plant substitutions from the original design, though the intent is the same: these plantings are intended to shield the view towards the service areas and to discourage visitors from entering the service areas. Canadian hemlock was substituted with black pine, and the groundcover of Bulgarian ivy was removed and replaced with sod. Wintercreeper is also now used as a groundcover.

The grass lawn was conceived by Saarinen and Kiley to stand in contrast to the dense plantings along the pathways. The open lawn at the base of the Gateway Arch enhances the structure's monumentality and allows for the view corridor between the Old Courthouse, the Gateway Arch, and the river. The openness of the grassy areas further serves to accentuate the sculpted nature of the landscape.

CIRCULATION

The sidewalks that traverse the site are important elements of the Saarinen-Kiley design, as they shaped visitor movement through the landscape. The location and alignment of walks strengthened the north-south axis of the landscape, orchestrated views towards the Gateway Arch, and reflected the basic geometry of the structure, thus creating unity in the overall design. The alignment of the walks was constructed as the plan intended, but the NPS landscape architects chose the materials of exposed aggregate concrete. There are almost five miles of walkways inside the Memorial, and more than two miles outside the Memorial. The organization of the path system in the Memorial enhances the spatial organization and the designed views of the site. These landscape characteristics are a unified whole, united by the organizing geometry of the catenary curves and axes at the site.



View from the base of the Gateway Arch west towards the Old Courthouse.



View east from Kiener Plaza along the east-west axis.



Pathway south of the Gateway Arch with lines of ash trees.



Memorial Drive on the west side of the Memorial grounds.



Bald cypress circles on slope.



North reflecting pond.



Concrete steps and granite ramps leading to the underground visitor center.



View of Luther Ely Smith Square and the Old Courthouse.



Concrete benches along walks.

Leading to the Museum of Westward Expansion are entrance ramps and architectural features which were designed by Saarinen and Kiley and constructed in the 1960s. These ramps and features enter the visitor center and the Museum of Westward Expansion at the base of the Gateway Arch. Constructed originally of terrazzo, the ramps were later rebuilt in 1983 with granite slabs. The Grand Staircase, another landscape feature that is categorized under the subject of circulation, is discussed above under *Historic Buildings, Structures, Sites, Objects, and Districts*.

Saarinen and Kiley conceptually planned the Old Cathedral parking lot as part of the original Memorial. The lot was to be located south of the Old Cathedral, although its details, other than a planting bed on the west side of the lot, were not designed as part of the plan. The parking lot was constructed in 1961 and was redesigned in 1994 to include a new bus drop-off location and additional accessible parking spaces. Although identified in the Cultural Landscape Report as being a contributing element, the National Park Service has determined that the parking lot does not express a specific Saarinen-Kiley design concept. As such, it is not considered to be a contributing feature to the significance of the historic landscape.



Light standard with globe luminaire.